

Safe use of chlorpyrifos for insect pest management in leaf mustard (*Brassica juncea* (L) Coss.)

Abstract

Leaf or Chinese mustard (*Brassica juncea* L. Coss.) is one of the main vegetables consumed in Malaysia. Farmers widely use chlorpyrifos as active ingredients for insect pest control in leaf mustard crops, and repeated applications are a common practice. Thus, studies are needed to determine residue levels with respect to time or frequency of application to ensure residue levels at harvest are below the international MRL. An experiment was conducted in a greenhouse at the share farm in Universiti Putra Malaysia Bintulu Campus to study leaf residue levels of the insecticide chlorpyrifos used to control insect pests in leaf mustard (*Brassica juncea* L. Coss.). There were three treatments including an untreated control in four replicates. Chlorpyrifos was applied at 0.46, 0.92 kg a.i./ha at 3 weeks after sowing. Leaf samples for residue analysis were harvested at 8, 14 and 20 days after treatment. Chlorpyrifos residue levels in the leaf samples were determined by HPLC (JASCO LC-2000 plus series), fitted with an Inertsil ODS-3 (5 μ m, 4 mm \times 50 mm length) column with PDA-wavelength detector. Insect damage assessment was determined at 13 and 18 days after treatment to evaluate effectiveness of the treatments. Insect damage was significantly higher in the control compared to insecticide treatments. Chlorpyrifos residue was not detected in all leaf samples at 8, 14 and 20 days after treatment. This suggests that a single application of chlorpyrifos at 3 weeks after planting did not pose any residue problems in leaves harvested after 4 weeks from planting, and thus were safe for consumption.

Keyword: *Brassica juncea* (L) Coss.; Leaf mustard; Chlorpyrifos; Pest management.